

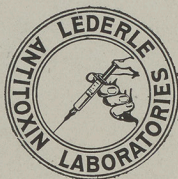
Order.

Prophylaxis and Treatment

OF

TYPHOID
FEVER

WITH
VACCINES



Lederle Antitoxin Laboratories

511 Fifth Avenue
Cor. 43rd Street
New York City

1919

Prophylaxis

VACCINATION against typhoid fever is now a procedure of established worth. The disease has been eliminated in the United States Army by compulsory prophylactic vaccination. From 1909 to 1913 more than 85,000 American soldiers were vaccinated against typhoid fever, and the death rate in the Army was reduced from 3.03 per thousand to 0. In 1911 typhoid vaccination was carried out on 61,000 British soldiers in India. Among the unvaccinated, the death rate was 1.15 per thousand, but only 0.17 per thousand among the vaccinated. The death rate was thus reduced 85%. Statistics are not yet available to show the value of typhoid vaccination in the armies during the recent World War, but authoritative reports show that typhoid fever was not a factor in disabling the personnel of the armies. It is obvious that if every individual in civilian life could be induced to take the prophylactic vaccination for typhoid

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fever, the disease would just as quickly disappear in the civilian population as it has in the Army.

Kind of Vaccine

Originally, vaccination against typhoid fever was carried out in the United States and British Armies by using a vaccine prepared only from the typhoid bacillus. Extensive studies conducted in America as well as in several foreign countries demonstrated that from 2% to 4% of cases which clinically resembled typhoid fever were actually paratyphoid fever. To protect against both typhoid and paratyphoid infection, a combined vaccine prepared from the typhoid bacillus and from the paratyphoid "A" and paratyphoid "B" bacilli was advocated. A bacterial vaccine prepared from the typhoid bacillus only is effective in preventing true typhoid fever. The combined vaccine containing the typhoid bacillus as well as paratyphoid "A" and paratyphoid "B" bacilli has, however, been universally adopted by the armies

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of the world and its general use would be justifiable and logical, and more certain to stamp out typhoid infections.

Practical Application

Typhoid vaccination is carried out in almost all the large hospitals of the larger cities of the world; the nurses, house staff and administration staff being immunized. In the presence of an epidemic, the extension of this measure to certain phases of civilian life is definitely indicated. Vaccination is particularly indicated for those leaving their homes for travel or for life in the country where sources of water and food supplies are suddenly changed. This applies also to children going away on vacations or to school. Railroads and other industrial concerns that employ large numbers of men, as well as individuals on farms and all persons who are compelled to live under unsupervised sanitary conditions find in typhoid vaccination the same protection against incapacity due to typhoid fever that has been experienced through its use in the world armies.

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Administration

Three doses of either the plain Typhoid Vaccine or Typhoid Combined Vaccine are given at seven to ten day intervals. In army practice, the ten day interval is used as most desirable; but in civilian life the seven day interval is often more convenient, thus bringing the three doses on three successive Saturdays. The vaccine should be injected *subcutaneously*, and not into the muscles. Deep intramuscular injections, because of the rapid absorption, are more apt to produce severe reactions and pain on movement. The best location for the injection is the outer surface of the arm over the insertion of the deltoid muscle where the subcutaneous tissue is abundant.

Experience has shown that the most suitable hour of the day for vaccinating is late in the afternoon, since the reaction does not appear usually until four or five hours later, at which time the patient is ready to retire, and by morning the entire reaction may have passed. It is wise to caution against active exercise and all

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excesses on the day following vaccination. The first dose of the vaccine should not be administered to women during or near the time of the menstrual period. Vaccination is well borne by children, the dose being proportional to the body weight, taking 150 pounds as the unit.

Reaction

Following any dose of the vaccine, but more frequently after the first dose, there may be a *local reaction* characterized by redness and tenderness about the point of inoculation. There may also be a *general reaction* characterized by headache, and lassitude and moderate fever. A mild, general reaction resembles the feeling of discomfort associated with the onset of an attack of influenza. Colonel Russell, of the United States Army, kept a record of over 130,000 vaccinations, and found that in over 96% the general reaction was mild or else absent.

Re-vaccination

In children re-vaccination should be performed more frequently than in adults. In vaccinating against typhoid fever it is a good plan to use the method recom-

mended in smallpox vaccination, namely, to vaccinate once in infancy, once in childhood, once in youth and once in adult life.

Treatment

The most complete analysis of the bacterial therapy of typhoid fever was made by Watters (*Medical Record*, 1913, LXXIV, page 518) who summarized the results obtained in the treatment of 1,120 cases. The mortality was 4.7%. During a similar period he states that in 100 typhoid patients who had not received vaccine treatment the mortality was 13%. From Watters series it appears that (1) the mortality was slightly lower among patients treated with vaccine; (2) duration of the fever was about 10 days less in the vaccine-treated cases, and (3) the percentage of relapses was diminished in the vaccine-treated cases.

After a study of 323 cases of typhoid fever treated with vaccines, Callison (*Medical Record*, June 24, 1911, page 1129) concludes: (1) inoculations of vaccine in typhoid fever prevent relapses and lessen complications, and in some cases probably shorten the original at-

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tack; (2) in typhoid fever, such vaccines are without injurious effect, and do not interfere with other treatment.

An analysis by Krumbhaar and Richardson (*American Journal of the Medical Sciences*, March, 1915, page 405) of more than 1,800 cases of typhoid fever treated with vaccines shows that favorable results were obtained in 95%. Moreover, 35 out of the 39 observers concluded that the vaccine was useful as a therapeutic measure. Most of the authors have felt convinced that typhoid patients treated with vaccine suffered less depression, had less temperature, were brighter and had fewer complications; and that, conservatively used, vaccines can do no harm in the treatment of typhoid fever.

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Packages for Prophylaxis

(Plain or Combined Vaccines)

One complete immunization in three syringes.....	\$2.25
One complete immunization in three vials..	1.00
Ten complete immunizations in thirty vials	5.00

Packages for Treatment

(Plain Typhoid Vaccine Only)

Four syringes—dilutions 1, 2, 3 and 4.....	\$3.00
Single syringes Nos. 1, 2, 3, 4 or 5	.75
Four vials—dilutions 1, 2, 3 and 4.....	1.50
5 c.c. vial in No. 4 dilution.....	1.00
10 c.c. vial in No. 4 dilution.....	1.85
20 c.c. vial in No. 4 dilution... ..	3.50

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Dilutions for Prophylaxis

Plain Typhoid Vaccine

Tabulated in Millions			
	1st Dose	2d Dose	3d Dose
B. Typhosus.....	500	1000	1000

Typhoid Combined Vaccine

Tabulated in Millions			
	1st Dose	2d Dose	3d Dose
B. Typhosus.....	500	1000	1000
B. Paratyphosus "A"....	250	500	500
B. Paratyphosus "B"....	250	500	500

Dilutions for Treatment

Plain Typhoid Vaccine

Tabulated in Millions					
	No. 1	No. 2	No. 3	No. 4	No. 5
B. Typhosus....	100	250	500	1000	2000

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